Remarks

I.   Introduction

A.   General

The following is Applicants' response to the Office Action dated July 8, 2004.
There are currently 46 claims pending in the above-indicated application. Claims 1-46
have been rejected under 35 U.S.C. § 102 for anticipation based on the single reference
U.S. Patent No. 6,201,948 to Cook et al. ("the '948 patent"). Applicants submit that a
critical review of the '948 patent will show that the Examiner's reliance on the '948
patent is misplaced and the rejection should be withdrawn, thereby placing the present
application in condition for allowance.

Applicants would like to thank Examiners Marc Thompson and Tammy Nguyen
for the in-person interview granted September 8, 2004. At that interview, the '948 patent
was discussed in view of independent claim 1. In particular, Applicants discussed the
teachings of the '948 patent and the reliance that Examiner Nguyen indicated supported
the anticipation rejection. As Applicants demonstrated at the interview and will show in
this Response, the Examiner's reliance on the '948 patent is misplaced and does not
support an anticipation or obviousness rejection. Further, Applicants and the Examiners
discussed clarifying amendments to the claims that would not change the scope of claims
1 and 38, and, as such, would not require an additional search. These clarifying
amendments are directed to (i) the user of the system being capable of having multiple
roles in the system with regard to a number of courses, and access to and control of
course files based on these multiple roles, and (ii) the system being a course-centric,
instructor-based instruction system.

Applicants also are submitting clarifying amendments to the preambles of
independent claims 1, 37, and 38. The clarifying amendments to these preambles make
clear what is being claimed in the body of the respective independent claims.

The clarifying amendments to claims 1–46 make plain that there are features of
the present invention that clearly are not taught, suggested, or obvious in view of the '948
patent. Having made these clarifying amendments, the application is in condition for
allowance, and allowance is requested at the earliest possible date.

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Applicant's have amended claim 16 only for the purpose of correcting a typographical error.

B.   The Standard for Anticipation

The standard for sustaining a rejection for anticipation is that a single prior art reference must disclose each and every limitation of the claim. *See*, e.g., *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003; *Trintic Industries, Inc. v. Top-USA Corp.*, 295 F.3d 1292-1295 (Fed. Cir 2002); *Brown v. 3M*, 265 F.3d 1349-1351 (Fed. Cir. 2001). The '948 patent cited as anticipating claims 1 to 46 of the present application does not meet this standard.

II.   U.S. Patent No. 6,201,948 to Cook et al.

U.S. Patent No. 6,201,948 to Cook et al. ("the '948 patent") is directed to an agent-based instruction ("ABI") system for interactive, adaptive, and individualized computer-based instruction. More specifically, the ABI system of the '948 patent is used to individually teach students according to how they interact with the system. Attachment A is directed to the pertinent parts of the '948 patent that support Applicant's position that the '948 patent is used for tutoring students and is not instructor-based instruction implemented in a course-based instruction system as set forth in the present application.

The ABI system of the '948 patent provides a student with a virtual tutor that is implemented through an agent and adapted to each student for providing the individualized student interaction and instruction. The agent provides control over computer-assisted instruction material, and gives information and help to the student. The agent responds to the history of the student's behavior on the system. [4:38-56]

The primary goal of the ABI system is to act as a replacement for a human tutor. [2:20-41; 8:45-9:58] To do this, it is necessary for this system to be configured to treat each student individually. This also means that the ABI system of the '948 patent is specifically designed to monitor and react to the behavior of each individual student so that the tutoring experience will be maximized. This is the reason why the '948 patent puts so much emphasis on the agent and the personae that is the on-screen representative of the agent.

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The agent is the element of the system of the ABI that receives interactions from students, data on customization and student assignments from teachers, data of assigned courses from the school, and analysis of student body performance, and educational standards and criteria. This information is used to provide individualization of interactions with the particular students. [4:57-5:3]

Each student will interact with the agent, not the teacher in the tutoring experience. It is through this interaction with the agent that tutoring of the student is effected. The agent software and agent is implemented according to an "artificial intelligence" model. This will mean that as the student uses the agent, the agent software gains knowledge of that particular student's behavior and the agent/agent software is then able to tutor the student based on this behavior. As such, the agent acts very differently with each student in providing individualized tutoring.

The system of the '948 patent is enabled as an on-screen persona. This may be manifest in an animated multimedia persona. This persona helps guide the student for the purpose of the individualized tutoring based on that particular students behavior. [5:22-30]

III.   The Present Invention

The present invention is instructor-based instruction implemented in a course-based instruction system that may be provided over a computer network. [8:13-17] For convenience, the system of the present invention will hereafter be referred to as the instructor, course-based instruction system or "ICBI" system. Each ICBI system user has predefined characteristics that are directed to that user's predetermined role in the system. The ICBI system of the present invention also will recognize the multiple roles of the ICBI system users. [9:1-7; 18:11-17]

Course instructors provide students access to course materials. As such, the students enrolled in the course will be provided the same materials as a group over a computer network. This system does this by the <u>direct</u> interaction of students and instructors for the delivery of course materials and course content rather than on an individualized, personalized basis as in the ABI system of the '948 patent. The ICBI system of the present invention has no agent filter between the instructor and each

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student, so each student's participation in a course is directly interactive with the instructor and other students. [9:6-10:20; 12:7-17]

The ICBI system of the present invention is organized by course, and, as such, data storage and teaching mechanisms associated with the data are all organized through an interface for the course. [20:4-22] Because the present ICBI invention provides learning on a course basis, the students experience learning is a classroom-based environment-rather-than-an-individualized-tutoring-basis.

The ICBI system also permits a student to have a single login in order for that student to be provided with access to the course files for all of the courses in which that student is enrolled. [10:22-30; claim. 25]

IV. The Examiner's Rejection of Claims 1-36 is Not Supported by the '948 Patent

In the Office Action dated July 8, 2004, Examiner Nguyen rejected all 46 claims, including independent claims 1, 37 and 38, under 35 U.S.C. § 102 for anticipation. For convenience at Attachment B, Applicants have compared what the Examiner has cited in rejecting independent claims 1, 37 and 38. A review of the tables in Attachment B plainly demonstrates that the cited portions of the '948 patent do not teach, suggest, or render obvious the claim elements against which they are cited.

In rejecting claim 1, the Examiner cites sections of the '948 patent that she relies on to demonstrate that the '948 patent teaches or suggests each of the particular elements of the claim. Applicants submit that these cited sections clearly do not teach what the Examiner suggests. The cited sections are shown in bold following the pertinent claim element:

> a) a plurality of user computers, each user computer associated with a user of the system having predefined characteristics indicative of a predetermined role of the system, each role providing a level of access to a plurality of data files associated with a course and a level of control over data files associated with a course **(col. 58, lines 35-65, shows level associated with other course)**, and
>
> b) a server computer in communications with each of the user companies over a network, the server computer comprising:

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means for assigning a level of access to each file, the level of access associated with the ability of the user to access the file **(Fig. 10A, level of file and col. 58, lines 35-45)**...

Before addressing the elements of claim 1 that Applicants submit are at least not taught or suggested by the '948 patent, Applicants wants to point out that the preamble of claim 1 has been amended to clarify the invention.[1] The preamble of claim 1, as amended, is directed to a "course-based instruction system..." This amendment to the preamble fundamentally distinguishes the ICBI system of claim 1 from the ABI system of the '948 patent. This is found since the ABI system of the '948 patent is directed to an individualized tutoring system that uses an agent and agent software (see Section II above),[2] while claim 1 of the present application is directed to a course-based instruction system for students enrolled in a course who directly interacts with the course instructor (see Section III above). As such, there is a fundamental difference between claim 1 and the ABI system based on the preamble of claim 1.

With respect to element "a" of claim 1, the Examiner cites column 58, lines 35-65 as support for this element being taught or suggested by the '948 patent. Applicants submit that this is incorrect.

Element "a" of claim 1 provides that access for a user of the system to data files for a course will be based on the user's "predefined characteristics indicative of a predetermined role in the system" and each of these roles will provide "a level of access to the data files associated with a course <u>and</u> a level of control over data files associated with the course." (Emphasis added.) This clearly is not what is taught or suggested at column 58, lines 35-65.

The '948 patent states the following at column 58, lines 35-65:

> The final display of the preferred on-screen agent object is
> generated from Display Behavior Tables 904 with a similar hierarchical
> table data structure to that used in utterance generation. At the highest
> level are on-screen agent actions which contain a cast of one or more
> personae. At the next level are personae types which the student selects
> once or at most once per session. At the next level, associated with each

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[1] Where the question of anticipation is raised, it is appropriate to consider the preamble of the claim as a limitation. *See*, e.g., *Electro Scientific Industries, Inc. v. Dynamic Details, Inc.*, 307 F.3d 1343-1349, (Fed. Cir. 2002); *In re Paulsen* 30 F.3d 1475-1479, (Fed. Cir. 1994); *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675-677-8, (Fed. Cir. 1988).

[2] The '948 patent seeks to replace a student's human tutor with a software based tutor – the "agent."

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personae type is a library of display behaviors indexed by affect....
Typically each affect has many possible behaviors and these are further
indexed, as for utterance generation, by parameters appearing in the action
list and the student data object. The display behaviors are structured as
scripts containing named display objects. These named display objects can
optionally involve voice, audio, graphics, or video displays, and they are
contained in scripts which can optionally specify a timed animated display
or a branching display, <u>where the branches are dependent on student
reactions</u> to the display. At the lowest level in the preferred embodiment
are the individual named display objects. As for slots, typically there are
several parametrized instantiations of each named object. These
instantiations are indexed according to the same parametrized indexing the
display behaviors and in turn use these parameters to generate displays.
Alternative embodiments of this invention are adaptable to hierarchies
with additional levels of tables for display generation tables or additional
types of tables at a given level of hierarchy. [Emphasis added.]

The passage from the '948 patent that the Examiner cites is directed to the on-
screen display including personae that is based on student behavior in responding to
tutoring through the agent. This passage describes what is presented at different levels of
presentation on an on-screen display of an ABI system. This passage of the '948 patent
has nothing to do with what element "a" is directed to which is access and control of data
files of courses for course management for a ICBI online education system, and this
access and control is based on "predefined characteristics indicative of a predetermined
role in the system." Therefore, the section that the Examiner cites for teaching or
suggesting element "a" of claim 1 of the present application does teach this element.
Further, a person of ordinary skill in the art would not find that the passage at column 58,
lines 35-65 would render element "a" obvious.

The Examiner has cited Figure 10A and column 58, lines 45-65 as teaching the
subparagraph of element "b" quoted above. In particular, the Examiner contends that
these two citations from the '948 patent teach a ICBI system that has "means for
assigning a level of access to each file, the level of access associated with the ability of
the user to access the file" that would be based on the user's role in such a ICBI system,
which role is predicated on being one of the multiple roles that the user is capable of
assuming. Applicants submit that this is incorrect.

Starting with the passage at column 58, lines 45-65, this is a portion of the same
passage about an ABI system that the Examiner cited as teaching element "a" of claim 1.

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As Applicants stated previously and it is incorporated here by reference, the passage at column 58, lines 45-65 clearly does not teach or suggest levels of access to data files of courses for course management in a ICBI online education system based on the user's role, which role is predicated on being one of the multiple roles the user is capable of assuming. The cited passage of the '948 patent is directed to the on-screen display of an ABI system including personae that is based on student behavior in responding to tutoring through the agent. This passage describes what is presented at different levels of an on-screen display of an ABI system and, therefore, does not support what the Examiner contends.

The second citation is to Figure 10A. Figure 10A is described at column 46 beginning at line 48. Figure 10A is directed to the structure of a student data object in an ABI system. The student data object is defined at column 9, lines 41-45 to be "data about each student which the agent software references in order to provide responsive, adaptive, and individualized instruction to the student; this data is updated during [the] course of each lesson and is advantageously stored as one object, or alternatively a few linked objects in the ABI system." Figure 10A, like the citation at column 58, lines 45-65, does not teach or suggest levels of access to data files of courses in a ICBI online education system. Moreover, a person of ordinary skill in the art also would not find that the cited subparagraph of element "b" would be rendered obvious in light of what is disclosed in Figure 10A or column 58, lines 45-65 of the '948 patent taken alone or in combination.

Noting the above with regard to the cited sections of the '948 patent, these sections do not teach or suggest what the Examiner contends in attempting to apply them to elements "a" and "b" of claim 1. As such, the Examiner has improperly applied the '948 patent to claim 1 and, therefore, the '948 patent would not teach or suggest at least two elements of claim 1 nor the preamble. Given that the '948 patent does not teach these three features of claim 1 of the present application, Applicants traverse the Examiner's anticipation rejection based on the '948 patent and request that it be withdrawn. Further, Applicants have demonstrated that claim 1 would not be obvious to one skilled in the art in view of the '948 patent.

Claims 2-36 depend from claim 1 and add further limitations to this claim. By being dependent claims, claims 2-36 are not anticipated or rendered obvious by the '948

patent for the same reasons as claim 1. As such, Applicants have traversed the rejection of claims 2-36 based on the '948 patent based on anticipation and request that it be withdrawn. Further, Applicants submit that claims 2-36 are not rendered obvious by the '948 patent for the same reasons as claim 1.

Applicants also have amended claims 2, 6, 7, and 8 to add further distinguishable features to these claims. Therefore, claims 2, 6, 7, and 8 are not anticipated or rendered obvious for the same reasons as claim 1, but also in light of these additional amendments.

V.   Amended Claim 1

Per this Response, claim 1 has been amended to clarify the preamble and features of elements "a" and "b." These clarifications to elements "a" and "b" were worked through and discussed with the Examiners at the September 8th interview. It was concluded at the interview that these amendments were clarifying amendments that did not change the scope of the claim 1. Applicants agree with this conclusion. Applicants submit that the amendment to the preamble is also a clarifying amendment. Noting this, claim 1, as amended, is not anticipated or rendered obvious for at least the reasons set forth in Section IV of this Response. Applicants reserve the right to provide additional reasons if the Examiner should not find claim 1 allowable over the '948 patent for the reasons set forth in this Response.

VI.   Claim 37 is Allowable

Claim 37 was rejected under 35 U.S.C. § 102 for anticipation based on the '948 patent. Claim 37, in amended form, states:

> 37. (Amended) A course-based system for providing to a community of users access to a plurality of online courses, comprising a server computer in communications with each of a plurality of computers over a network, the server computer comprising means for creating a plurality of course user accounts from a file of existing user accounts such that existing legacy computer systems having a plurality of user accounts stored thereon are capable of being integrated with the course-based system without having to reenter user account data from such legacy computer systems.

The amendment to the preamble of claim 37 is the same as the amendment to the preamble of claim 1. As such, Applicants incorporate by reference the reasons why the

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preamble of claim 1 should be considered in overcoming the Examiner's anticipation rejection as it has been applied to claim 37.

As amended, claim 37 includes the feature of "creating a plurality course user accounts from a file of existing user accounts such that existing legacy computer systems having a plurality of user accounts stored thereon are capable of being integrated with the course-based system <u>without</u> having to reenter user account data from such legacy computer systems." (Emphasis added.) The Examiner cited Figure 3 as anticipating this claim. Applicants submit that Figure 3 does not anticipate or render obvious claim 37.

Figure 3 is described in the specification beginning at column 24, line 38. Figure 3 shows the visual image of a screen display of the ABI system that is described in the '948 patent. A review of what is set forth with regard to Figure 3 makes plain that neither Figure 3 nor the remainder of the '948 patent teach or suggest, or render obvious the elements of claim 37 including the features of the preamble. Given this, Applicants have traversed the anticipation rejection and Applicants respectfully request that the anticipation rejection based on the '948 patent be withdrawn with regard to claim 37.

VII.   Claims 38-46 Are Allowable

Claim 38 was rejected under 35 U.S.C. § 102 for anticipation based on the '948 patent. Claim 38, in amended form, states:

> 38. (Amended) A course-based online education method for a community of users in a network based system, comprising the steps of:
>
> (a) establishing that each user is capable of having predefined characteristics indicative of multiple predetermined roles in the system and each role providing a level of access to and control of a plurality of course files;
> (b) establishing a course to be offered online comprising
> (i) generating a set of course files for use with teaching a course;
> (ii) transferring the course files to a server computer for storage; and
> (iii) allowing access to and control of the course files according to the established roles for the users according to step (a);
> (c) providing a predetermined level of access and control over the network to the course files to users with an established role as a student user enrolled in the course; and

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(d) providing a predetermined level of access and control over the network to the course files to users with an established role other than a student user enrolled in the course.

The amendments to claim 38, as stated, are clarifying amendments. This includes the amendment to the preamble. Applicants incorporate by reference its arguments set-forth in Section IV regarding why the preamble being considered in overcoming the Examiner's anticipation rejection to claim 1.

The Examiner rejected claim 38 for anticipation citing column 24, lines 51-63 of the '948 patent. The cited passage of the '948 patent states:

> On-screen Agent area 303 allows the student of meta-requests and allows the agent to display synchronous or asynchronous meta-responses. This exemplary area illustrated in FIG. 3 comprises meta-request button 320 which the student can activate to display a list of currently available meta-requests. The remainder of area 303 is for the agent meta-responses, which importantly have multi-media structured into persona. Illustrated are text message 318 and visual persona 319 that typically include animation. Also possible is audio output, either text-to-speech or generated from audio files.

A review of claim 38, as amended, shows that the claim includes the features of:

> (a) establishing that each user is capable of having predefined characteristics indicative of multiple predetermined roles in the system and each role providing a level of access to and control of a plurality of course files...

> * * *

> (c) providing a predetermined level of access and control over the network to the course files to users with an established role as a student user enrolled in the course; and
> (d) providing a predetermined level of access and control over the network to the course files to users with an established role other than a student user enrolled in the course.

The '948 patent, at column 24, lines 51-63, describes the on-screen display of the ABI system at Figure 3. Neither this screen display nor other sections of the '948 patent teach or suggest at least these elements of claim 38 or the features of the preamble. Moreover, claim 38 includes elements "a," "c," and "d," which are not rendered obvious by the '948 patent. Noting the foregoing, Applicants have

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traversed the Examiner's basis for rejecting claim 38 for anticipation based on the '948 patent. As such, Applicants respectfully request that the Examiner withdraw the anticipation rejection to claim 38.

Claims 39-46 depend from claim 38 and add further limitations to this claim. By being dependent claims, claims 39-46 are not anticipated or rendered obvious by the '948 patent for the same reasons as claim 38. Therefore, Applicants have traversed the rejection of claims 39-46 based on the '948 patent based on anticipation and request that it be withdrawn. Further, Applicants submit that claims 39-46 are not rendered obvious by the '948 patent for the same reasons as claim 38.

In this Response, Applicants have amended dependent claims 39, 40, and 42. These amendments were made to claims 39, 40, and 42 to align them with claim 38, as amended. The changes to claims 39, 40, and 42 do not change the scope of these claims.
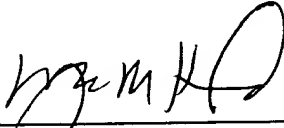
VII. Conclusion

Applicants again would like to thank Examiners Thompson and Nguyen for the in-person interview on September 8, 2004. In this Response, Applicants have traversed each of the Examiner's bases for rejecting pending claims 1-46 under 35 U.S.C. § 102 for anticipation based on the '948 patent. As such, Applicants have placed the claims of the application in condition for allowance.

The present invention is new, non-obvious, and useful. Reconsideration and allowance are respectfully requested, and the application sent to issue at the earliest possible time.

No fees are believed to be due in connection with this paper. If any fees are due, please debit our Deposit Acct. No. 08-0219.

Respectfully submitted,

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Attachment A

A. Teaching of the Background

Citation (Column:Lines)	Quotation
1:12-20	More particularly the system and method includes for each student an agent adapted to that student which monitors its student's instructional behavior, responds to teacher direction, and controls the instructional progress, and guides its student, all of which constitute one aspect of a virtual tutor. Preferably, the viewable on-screen aspect of the agent includes a customizable multimedia presentation personae, which constitutes a further aspect of a virtual tutor.
1:29-52	Although during the last three decades, a number of interactive educational techniques have been implemented on computers, all [of] these systems lack the ability to recognize and to adapt to each student's individual characteristics. The common motivation for interactive educational techniques was the recognition that individual student interaction fosters learning to a greater degree that mere passive exposure to a fixed face presentation. [Citation omitted]. Existing, interactive educational techniques have many variants: programmed instruction, mastery learning, audio-tutorials, direct instruction, personalized system of instruction, precision teaching, fluency learning and others [Citation omitted].
1:60-2:19	In CAI [Computer-Assisted Instruction], for example, the computer acts as a teaching machine. A program presents instructional displays, accepts student responses, edits and judges those responses, branches on the basis of student responses, gives feedback to the student, and records and stores the student's progress…[Citations omitted]. However, existing CAI systems do not adapt to their students. These systems merely sequence students through educational materials, based only on student performance during a current lesson and using only parameters such as recent responses and pre-requisite patterns. These systems do not gather or use information on more comprehensive student characteristics, such as past student performance, student performance on other courses, student leaning styles and student interests.
2:20-41	A great deficiency is that existing CAI systems do not recognize characteristics of their individual students. They cannot be individualized or made responsive to their students styles. Thereby, these system[s] ignore those roles of a human tutor that can be of unparalleled significance in the education of an individual. The human tutor assists in scheduling and prioritizing and in maintaining interest through proper reinforcement and knowledge of student abilities and preferences. A human tutor observes and addresses patterns of errors and maintains a

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	consistent manner of interaction across a broad range of subject matters and activities. Moreover, a human tutor effectively integrates the cognitive, personal and social aspects of the instructional situation. In other words the human tutor provides a level of individualization based on student styles and on requirements of the instructional task.... By failing to address these higher order services and roles of an effective human tutor, existing CAI systems fail to fully engage their students and thus fail [to] instruct as well as possible.
3:30-39	Recently, adaptive and personalized agent-based systems have begun to be developed. Systems with adaptive agents, agents which learn from experience, has made gains with new techniques continually identified. Adaptive agents have permitted new commercially viable adaptive systems implemented across networks. In these systems, an agent is a "go-between," mediating relations in a manner whose function is understood with details being left to the agent itself. The agent acts as a "stand-in" for its user who is thus freed from direct manipulation of the network.
4:29-31	Existing CAI systems have not addressed these functional deficiencies nor have they exploited the possibilities of existing technologies.

B.   Teaching of the Summary of the Invention

Citation (Column:Line)	Quotation
4:38-43	The Agent Based Instruction ("ABI") system of this invention is a system and method for interactive, adaptive, and individualized computer-assisted instruction and homework, preferably implemented on network connected computers, that overcomes these problems by providing the following objects in preferred and alternative embodiments.
4:46-56	An important object of this invention is to provide the student with a virtual tutor, by having agent software ("agent") adapted to each student that offers a high quality of individualized student interaction and that manages or controls instruction in a manner approximating a real tutor....Agent behaviors are sensitive to both the educational context and to the history of student behavior.
4:57-5:2	In a preferred embodiment of this invention the agent integrates data from several sources. From computer-assisted instructional materials, it accepts data on the methods of instruction adopted by particular materials and on student performance in the instruction. From the student, it

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	accepts direct interactions as well as using history of previous student performance stored in a student data object. From the teacher, it accepts data on customization and student assignments. From the school, it accepts data on assigned courses, data on analysis of student body performance, and educational standards and criteria. In a preferred embodiment, these inputs allow individualization of agent interaction.
5:4-13	In the preferred embodiment of this invention, diverse agent behaviors are handled uniformly by a single means. The diverse behaviors include encouragement and feedback, providing meta-cognitive help on ongoing instruction, managing or controlling and individualizing computer based instruction to the student's learning modes, and assistance with assignment management. These diverse behaviors are selected from a set of potentially appropriate candidate behaviors. This set of candidate behaviors is ordered and the highest ranked behaviors are chosen.
5:22-30	Another important object of the invention is that the agent presents itself on-screen to the student with integrated, and optionally, animated multimedia persona, or preferably a plurality of persona. The on-screen agent can appear as living entities, which in grade school can be comfortable "Study Buddies™" and in adult training can ...appear as an objective "Concept Coach." The on-screen agent instructs, motivates, engages and guides its students

C.   Teaching of the Detailed Description of the Invention

Citation (Column:Line)	Quotation
8:10-21	Sec. 5.1 presents a general overview of the Agent Based Instruction system Sec. 5.2 describes the preferred hardware and operating software configurations. Sec. 5.3 describes details of the instructional interface between the ABI system and its users. Sec. 5.4 describes in general fashion the software structure of the ABI system with subsequent sections describing each component in a more detailed fashion. Sec. 5.5 describes the instructional materials and the tools in a more detailed fashion and Sec. 5.6 describes the agent in a more detailed fashion. Sec. 5.6 includes detailed description of the preferred interface between the agent and the materials in the ABI system.
8:45-9:58	Agent: agent software together with the data it references executing in the ABI system. Agent Based Instruction ("ABI"): System: the novel instructional system of this invention, preferably comprising an agent for responsive,

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		adaptive and individualized instruction of students and a network for distribution of instruction, <u>which projects the personae of the virtual tutor</u>.
		<u>Agent Software</u>: software modules that generate responsive, adaptive, and individualized behavior in the ABI system, <u>preferably implemented according to methods from artificial intelligence</u>.
		Cast: a plurality of persona ("personae") representing the on-screen agent.
		Character: an individual persona in the cast of the on-screen agent.
		<u>On-Screen Agent</u>: presentation by the agent software on the student's display using such media as sound, voice, graphics, animation, video, or other multimedia modality; this presentation preferably displays one or more life-like personae.
		Persona: a character in the cast of an on-screen agent.
		Personae: the collective plural of persona.
		<u>Student Data Object</u>: data about each student which the agent software references in order to provide responsive, adaptive, and individualized instruction to the student; this data is updated during [the] course of each lesson and is advantageously stored as one object, or alternatively a few linked objects in the ABI system.
		<u>Virtual Tutor</u>: the ABI system components acting together to emulate a human tutor; from an individual student's perspective, the Study Buddies, Electronic Learning Friend, or Concept Coach appears as his or her personal tutor.
10:1-12		[The principal functional components of the ABI system] ... include, generally, materials engine 102, agent software 108, and student data object 109, all of which interact with student 101 and with teachers and administrators 106 via a computer network discussed below in conjunction with Fig. 2 to create a virtual tutor of student 101. Student 101 is typically one of many students enrolled in a school or similar institution. Central to the ABI System is the virtual tour individualized to each student, which formed by the functioning of agent software 108 with student data object 109, which stores characteristics of student 101 and assignments and standards set by teachers and administrators 106.
10:50-51		The materials engine can adjust its sequence of presentation in response to student responses.

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Attachment A

10:66-11:5	Teachers and administrators 106 also interact with materials engine 102 for several purposes, as represented by arrow 107. For example, teachers can customize existing materials by adding additional items, modifying existing items, altering the order of item presentation, changing the notations…governing agent interaction, and so forth.
11:51-12:2	ABI authoring tools differ from authoring conventional instructional materials in that notations are present in these materials to enable the agent software to update the student data object, to monitor and modify the instructions, student's use of a tool, or communications task. ABI authoring tools support and facilitate the conversion of existing materials to the ABI instructional format. As indicated above, an agent unique to each student 101 is important in the ABI system. A student's agent is comprised of agent software 108 in conjunction with a student data object 109 unique to each student. As the agent software monitors its student's instruction, it builds an adaptive model of its student in student data object 109. Guided by this model, agent software 108 acts, first to manage or control the student's instruction, and second, to directly guide the student in order that the total ABI system can present education to each student in an optimal fashion best adapted to the student's evolving abilities, skills, and preferences.
12:31-51	[A]gent software 108 directly guides the student by exchanging communications with the student, as represented by arrow 112…. Herein, requests and responses are prefixed with "meta" when they are exchanged directly with the agent. Meta-requests include student questions to the agent…. The agent responds to each student question or request. Agent meta-responses can be generated, for example, when the student takes too long to complete an exercise, when a student makes a series of repeated errors, or when the student achieves good performance. Agent meta-responses can be drawn from such categories as reminders, encouragements, reinforcements, paraphrases, jokes, progress summaries, and so forth.
13:40-45	It is important that communication between the student and the agent be engaging. Agent communication preferably utilizes all modalities of input and output available in a particular implementation of this invention, including text, audio displays such as voice and sound, and video displays, such as graphics, animation, and realistic movie clips.
14:19-39	In the preferred embodiment, the student data object 109 collects all pemanent data about the student maintained by the ABI system…. The student data objects are accessed not only by the agent software 108, but also by teachers and administrators 106. As depicted by arrow 110, the data object is referenced by the agent in order to generate its

	actions and is updated by the agent as it processes events and student meta-requests.
17:37-43	System manager 234 includes facilities for access control, authenticating student access requests, and limiting file access to authorized users. For example, students can be limited to only their personal files; parents to their children's files and curricular related data; teachers to files and student objects or their classes; while certain administrators have unlimited access.
28:5-28	The teacher or teacher's representative plays an important role in the ABI system. The teacher uses the system to perform such functions as entering initial profiles in student data objects, assigning students to subgroups, previewing, annotating and scheduling assignments, reviewing and commenting on completed homework assignments, and reviewing summary reports. The agent of the student is also an agent of the student's teacher in that the student's teacher controls key parameters in the student data object, which in turn controls agent actions. The teacher customizes the ABI system by setting student data object parameters, assigning and prioritizing assignments, and customizing materials [the teacher controls a student's use of the ABI system].
29:7-14	Other actors, such as school administrative staff, parents and researchers, can play a role in the ABI system. Administrative staff can have privileged access to certain data items in the student and teacher data objects and other system data, which, permits them to assign students to courses, to assign students to teachers, and to establish instructional performance standards and criteria which the students must meet to complete their materials.
46:51-53	It is an object comprising structured student data 1102 and methods 1103 for accessing and updating the student data ....
58:34-57	The final display of the preferred on-screen agent object is generated from Display Behavior Tables 904 with a similar hierarchical table data structure to that used in utterance generation. At the highest level are on-screen agent actions which contain a cast of one or more personae. At the next level are persona types which the student selects once, or at most once per session. At the next level, associated with each persona type is a library of display behaviors indexed by affect..... At the lowest level in the preferred embodiment are the individual named display objects.

Attachment B

Claim 1 (As Amended)	'948 Patent
A course-based system for providing to an educational community of users access to a plurality of online courses, comprising:	An Agent-Based System
a) a plurality of user computers, with each user computer being associated with a user of the system and with each user being capable of having predefined characteristics indicative of multiple predetermined roles in the system, each role providing a level of access to a plurality of data files associated with a particular course and a level of control over the data files associated with a the course, and	Column 58, lines 35-65 The final display of the preferred on-screen agent object is generated from Display Behavior Tables 904 with a similar hierarchical table data structure to that used in utterance generation. At the highest level are on-screen agent actions which contain a cast of one or more personae. At the next level are persona types which the student selects once, or at most once per session. At the next level, associated with each persona type is a library associated with each personae type is a library of display behaviors indexed by affect.... Typically each affect has many possible behaviors and these are further indexed, as for utterance generation, by parameters appearing in the action list and the student data object. The display behaviors are structured as scripts containing named display objects. These named display objects can optionally involve voice, audio, graphics, or video displays, and they are contained in scripts which can optionally specify a timed animated display or a branching display, where the branches are dependent on student reactions to the display. At the lowest level in the preferred embodiment are the individual named display objects. As for slots, typically there are several parametrized instantiations of each named object. These parametrized instantiations are indexed according to the same parametrized indexing the display behaviors and in turn use these parameters to generate displays. Alternative embodiments of this invention are adaptable to hierarchies with additional levels of tables for display generation tables or additional types of tables at a given

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	level of hierarchy.
b) a server computer in communication with each of the user computers over a network, the server computer comprising:	N/A for this analysis.
means for storing a plurality of data files associated with a course,	N/A for this analysis.
means for assigning a level of access to and control of each data file based on a user's predetermined role in a course;	Column 58, lines 35-45 and Figure 10 The final display of the preferred on-screen agent object is generated from Display Behavior Tables 904 with a similar hierarchical table data structure to that used in utterance generation. At the highest level are on-screen agent actions which contain a cast of one or more personae. At the next level are personae types which the student selects once or at most once per session. At the next level, associated with each personae type is a library of display behaviors indexed by affect....
means for determining whether access to a data file associated with the course is authorized;	N/A for this analysis.
means for allowing access to and control of a the data file associated with the a course if authorization is granted based on the access level of the user.	N/A for this analysis.

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Claim 37	'948 Patent
A course-based system for providing to a community of users access to a plurality of online courses, comprising a server computer in communication with each of a plurality of user computers over a network, the server computer comprising means for creating a plurality of course user accounts from a file of existing user accounts such that existing legacy computer systems having a plurality of user accounts stored thereon are capable of being integrated with the course-based system without having to reenter user account data from such legacy computer systems.	24:38 and Figure 3 In materials area 304, instructional material, tools, and communications materials display their content. Illustrated in Fig. 3 is page 3 of an exemplary mathematics homework. Instructional materials are advantageously structured as a book of exercises and items, emulating current textbook and workbook practice. In this case, section tabs 312 permit the student to navigate the homework book by sections, and page buttons 321 permit the student to navigate the homework book by page. Also present is toolbar 317 of available student actions, which for homework includes submit and can, if the agent permits, include help and hint requests. The format of a materials page is advantageously standardized. An exemplary standardization has header information 314, presentation 315, and interactive input area 316.

Attachment B

Claim	'948 Patent
Cl. An online education method for a community of users in a network based system, comprising the steps of:	A method for an Agent-Based System.
a. establishing that each user is capable of having predefined characteristics indicative of multiple predetermined roles in the system and each role providing a level of access to and control of a plurality of course files;	24:61-63 On-screen Agent area 303 allows the student of meta-requests and allows the agent to display synchronous or asynchronous meta-responses. This exemplary area illustrated in FIG. 3 comprises meta-request button 320 which the student can activate to display a list of currently available meta-requests. The remainder of area 303 is for the agent meta-responses, which importantly have multi-media structured into persona. Illustrated are text message 318 and visual persona 319 that typically include animation. Also possible is audio output, either text-to-speech or generated from audio files.
b. establishing a course to be offered online, comprising	N/A for this analysis.
i. generating a set of course files for use with teaching a course;	N/A for this analysis.
ii. transferring the course files to a server computer for storage; and	N/A for this analysis.
iii. allowing access to and control of the course files according to the established roles for the users according to step (a);	N/A for this analysis.
c. providing a predetermined level of access and control over the network to the course files to users with an established	24:61-63 On-screen Agent area 303 allows the student of meta-requests and allows the agent to display synchronous or

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	role as a student user enrolled in the course; and	asynchronous meta-responses. This exemplary area illustrated in FIG. 3 comprises meta-request button 320 which the student can activate to display a list of currently available meta-requests. The remainder of area 303 is for the agent meta-responses, which importantly have multi-media structured into persona. Illustrated are text message 318 and visual persona 319 that typically include animation. Also possible is audio output, either text-to-speech or generated from audio files.
d.	providing a predetermined level of access and control over the network to the course files to users with an established role other than a student user enrolled in the course.	24:61-63 On-screen Agent area 303 allows the student of meta-requests and allows the agent to display synchronous or asynchronous meta-responses. This exemplary area illustrated in FIG. 3 comprises meta-request button 320 which the student can activate to display a list of currently available meta-requests. The remainder of area 303 is for the agent meta-responses, which importantly have multi-media structured into persona. Illustrated are text message 318 and visual persona 319 that typically include animation. Also possible is audio output, either text-to-speech or generated from audio files.

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